First Illustrations of Ferns from Peru and Chile

JOSEPH EWAN

Linnaeus recognized twelve genera of ferns in his *Species Plantarum* of 1753. The largest genus was *Polypodium* with fifty-eight species of which over sixty percent are American. Included in his genus "*Polypodium*" were species now known to be species of *Polystichum, Dryopteris, Cystopteris, Cyathea,* and other genera. Some eight authors were cited by Linnaeus in providing the bibliographies for the New World species. He cited his own works first, as elsewhere in his *Species Plantarum*, followed by references to the works of Plumier, Petiver, Gronovius, Plukenet, Morison, Hans Sloane, and John Ray. Though Linnaeus lists "Fewillaei *peruviana*" as one of his sources in the introduction to his classic, he does not refer to Feuillée in the pages devoted to "Cryptogamia Filices," evidently overlooking the fern descriptions contained in his work when writing the account of the several American species. This is more unusual since Feuillée illustrated two species based on Chilean observations not previously pictured. Father Luis Feuillée (1660-1732), explorer, astronomer, and botanist, was the author of the first herbal for Peru and Chile in which these fern drawings appeared.

Luis Econches Feuillée was born at Mane, near Forcalquier, in Provence, in the year 1660, of humble parents. In his twentieth year Luis joined the Order of the Minimi. At this time Europe was awakening to a lively interest in the sciences—the Royal Society was founded in London when Luis was two years old, and the Academie des Sciences was chartered by Louis XIV in 1666. Feuillée's taste for the sciences attracted attention in official circles and in 1699 he was sent to the Levant as an aide to Jacques Cassini on a hydrographic mission to determine the character of ports, to map offshore currents, and so forth. His mission to the Antilles in 1703 was an extension of this assignment; on this expedition he went ashore at Martinique, Caracas, and elsewhere, and returned to Brest in 1706. On Decem-

JOURNAL
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Faites par l'ordre du Roy sur les Côtes Orientales de l'Amerique Meridionale, & dans les Indes Occidentales, depuis l'année 1707. jusques en 1712.

Par le R. P. LOUIS FEUILLÉE, *Religieux Minime, Mathematicien, Botaniste de* SA MAJESTÉ, *& Correspondant de l'Académie Royale des Sciences.*

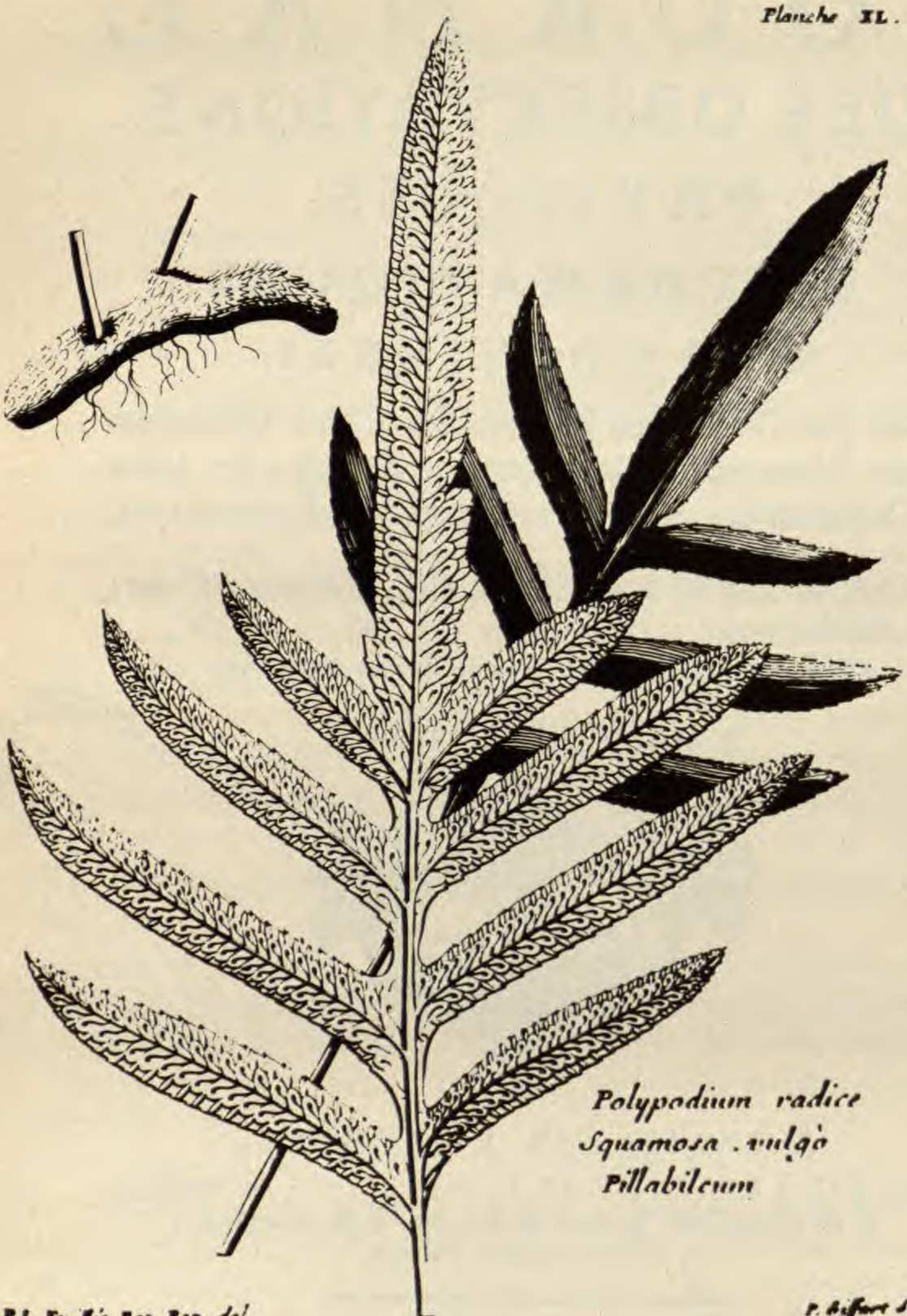
TOME SECOND.

A PARIS, RUE S. JACQUES,
Chez PIERRE GIFFART, Libraire Graveur du Roy,
& de l'Academie Royale de Peinture & de Sculpture,
à l'Image Sainte Therese.

M. DCC. XIV.
AVEC APPROBATIONS ET PRIVILEGE DU ROY.

Title Page of Feuillée's Rare Journal (1714) of His Travels on the Coasts of Peru and Chile

Planche XL.



Feuillée's Original Illustration of Polypodium feuillei Bert. of Chile

ber 14, 1707, Feuillée again set sail for America, but was forced to return to Teneriffe by contrary winds in May, 1708; he succeeded in rounding the Horn in January and he reached Peru in April, 1709. For the next nine months he mapped the port of Callao and other smaller roadsteads, directed the artist Pierre Giffart[1] in the sketching of the city's skyline, described several of the animals he encountered, the distinctive *balsas* of Peru, and computed astronomical data before proceeding to Chile on the return voyage to France.

It was upon Feuillée's visit to Concepcion in January, 1711, that he observed, described, and illustrated the fern named *Polypodium feuillei* in 1829 by Bertero. Feuillée had identified the fern he found "au Nord de la Ville de Pinco" as "Polypodium radice squamosa. vulgo Pillabilcum," following the current practice of applying polynomials which were indeed short to long descriptive names for the plants in question. Elsewhere in his diary Feuillée more closely locates the habitat as the mountains to the east of the little valley called Pinco (1714: 545). Looser (1951: 41) corrected Pinco to "Penco" and located it on the Bay of Talcahuano. As Looser remarked this drawing (*Pl. 2*), which was *Plate 40* in Feuillée's work of 1714, is an excellent illustration of a sterile frond. Looser (1948: 85) says that *Polypodium feuillei* is "a very common epiphyte; also on walls" in the region of Corral, Niebla, and in the vicinity of Valdivia, where it ranges from 400 m. above sea level down to the shores of the Pacific. Kunkel (1959) recently published a paper on the nine infraspecific taxa of this fern. Feuillée's plate stands about intermediate between the var. *feuillei*, that is, the typical variety as interpreted by Kunkel, and var. *ibanezii* Loos. (cf. Kunkel's *plate 42*), but it will be noted that Looser's illustration of his var. *ibanezii* (*fig. 9*) shows a terminal lobe of the frond which is broad and irregularly toothed, being rather different from Kunkel's interpretation of that variety.

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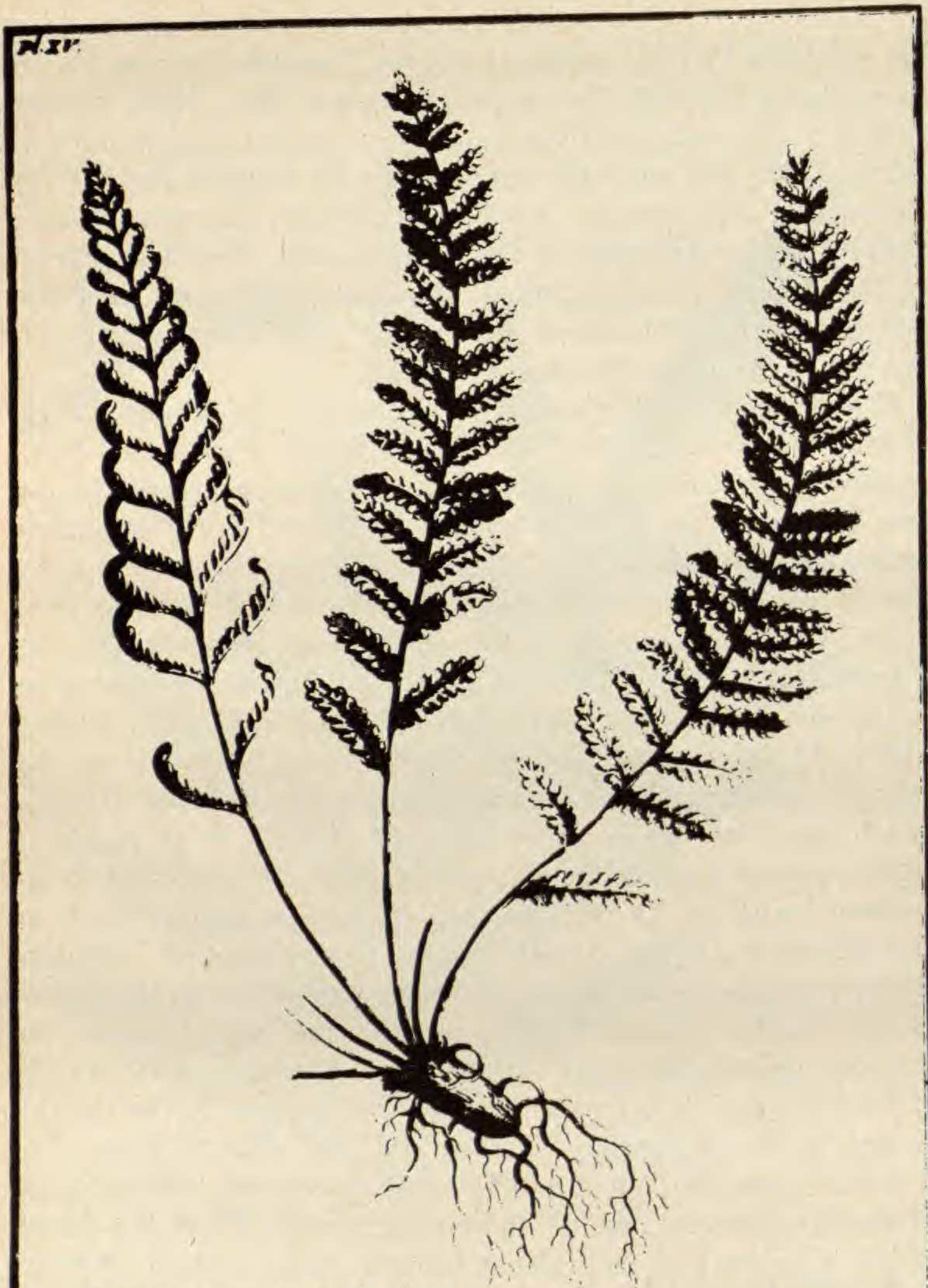
[1] Giffart was also engraver for Plumier's great work *Nova Plantarum Americanarum Genera* (1703).



Feuillée's Original Illustration of Notholaena mollis Kunze of Chile

A second fern more briefly described by Feuillée and less accurately illustrated as well was *Notholaena mollis* Kunze. This second Chilean fern to be illustrated in botanical literature has a more obscure origin, for Feuillée fails to record where he observed this species. This fern is known from Coquimbo[2] and may have been observed there when he visited the port in April, 1710. The third volume of Feuillée's work, published in 1725, was illustrated by an unknown artist, Giffart having died in 1723. The xerophytic character of this *Notholaena* (*cf. Pl. 3*) doubtless engaged Feuillée's attention for he likely noticed the "resurrection habit" of alternately drying and reviving with wet and rainless periods. This fern was evidently not distinctive enough to be involved in early species descriptions as was *Polypodium feuillei*.

Feuillée's important contribution to the early knowledge of flowering plants has been sketched elsewhere by me (1959). Among the more notable of these were the genus *Fuchsia* and what has come to be called the "California Pepper Tree" (*Schinus molle*). Feuillée's later years included his election to the French Academy, his investigation of the island of Hierro in the Canaries in 1724, and the publication of the third volume of his *Journal*, already mentioned, in 1725. The only English translation of Feuillée's works was a much abridged treatise edited by Petiver entitled "The South Sea Herbal of Feuillée's Medicinal Plants," published in 1715 and including five plates. This seems to have been designed for sea captains. Father Feuillée died in Marseilles on April 18, 1732, the year of George Washington's birth.

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[2] W. T. Stearn remarks on the unusual opportunity among pre-Linnaean authors for locating the source of Feuillée's plants. Cf. his valuable Introduction to Linnaeus, *Sp. Pl.* (Ray Soc. reprint, London, 1957), p. 145.

Kunkel, G. Über *Polypodium feuillei* Bertero und neue varietäten dieser Art. Nova Hedwigia *1(2):* 195–202. 2 pls. 1959.
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ACKNOWLEDGMENT

It is a pleasure to acknowledge the assistance of Dr. R. M. Tryon in the identification of these ferns.

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Evergreen Grapeferns and the Meanings of Infraspecific Categories as Used in North American Pteridophytes

WARREN H. WAGNER, JR.[1]

In late years, work on the North American evergreen grapeferns (*Botrychium*, subg. *Sceptridium*) has led me to a taxonomic interpretation that deviates quite strongly from that of my predecessors. The plant I designate as *Botrychium oneidense* has been construed in the past mostly as a variety or form of *B. dissectum* or of *B. multifidum* or as their natural hybrid. The one now called *B. ternatum* (or its American representative) has been interpreted, if at all, as a form of *B. multifidum*. The occasion for this paper is to state briefly the philosophy on which these interpretations are founded, and, at the same time, to call attention to some of the usages of infraspecific categories to be found among other North American pteridophytes.

Estimates of the total of pteridophytic species that grow in North America north of Mexico range from roughly 340 to 380. We may never decide on the exact number of species, however, but not because of lack of exploration and research. In fact, I suspect that the next half-century will yield a tremendous expansion of our knowledge. The problem in estimating the number involves the taxonomic definitions themselves. There are no

[1] Research supported by the Horace H. Rackham School, University of Michigan. I am indebted to Dale J. Hagenah for introducing me to the problem, and to Edward G. Voss for advice on historical matters.